

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of

OISHI, K. et al.

Atty. Ref.: 461-76

Serial No. unknown

Group:

Filed: January 25, 2002

Examiner:

For: ELECTROMAGNETIC DRIVING DEVICE AND FLOW RATE CONTROLLING  
APPARATUS EMPLOYING THE SAME DRIVING DEVICE

\* \* \* \* \*

January 25, 2002

Assistant Commissioner for Patents  
Washington, DC 20231

Sir:

**PRELIMINARY AMENDMENT**

In order to place the above-identified application in better condition for  
examination, please amend the application as follows:

**IN THE CLAIMS**

Please substitute the following amended claims for corresponding claims  
previously presented. A copy of the amended claims showing current revisions is  
attached.

3. An electromagnetic driving device as set forth in Claim 1, wherein the hardness of at least one of sliding surfaces of said housing portion and said movable core is made equal to or larger than HV200, and wherein a difference in hardness between said sliding surface is equal to or smaller than HV300.

7. A flow rate controlling apparatus comprising;

a housing having a plurality of fluid paths which penetrate through a cylindrical circumferential wall,

an electromagnetic driving device as set forth in Claim 1,

a movable member adapted to reciprocate together with said movable core to thereby control the flow rate of fluid flowing through said fluid paths,  
and

biasing means for biasing said movable member in a direction opposite to a direction in which said movable core is attracted by said attracting portion.

**REMARKS**

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page(s) is captioned "**Version With Markings To Show Changes Made.**"

Respectfully submitted,

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE CLAIMS**

3. An electromagnetic driving device as set forth in Claim 1 ~~or~~ 2, wherein the hardness of at least one of sliding surfaces of said housing portion and said movable core is made equal to or larger than HV200, and wherein a difference in hardness between said sliding surface is equal to or smaller than HV300.

7. A flow rate controlling apparatus comprising;

a housing having a plurality of fluid paths which penetrate through a cylindrical circumferential wall,

an electromagnetic driving device as set forth in ~~any of~~ Claims 1 to 6,

a movable member adapted to reciprocate together with said movable core to thereby control the flow rate of fluid flowing through said fluid paths, and

biasing means for biasing said movable member in a direction opposite to a direction in which said movable core is attracted by said attracting portion.